Relation between Nervous and Glandular Tissue in Ascidians. — It is now fully established that the brain and neural gland in the ascidian embryo develop from a common Anlage. Professor M. M. Metcalf (*Biol. Bull.*, Vol. I, No. 1) has studied the relation of the nerve and duct which spring from the brain and gland, respectively, and run along the median line on the partition wall between the pharynx and cloaca, and finds a closeness of relations there between the two tissues that is quite as remarkable as is the fact of their common origin.

In *Amaroncium constellatum*, for example, a rudimentary duct starts out from the gland, but soon loses its lumen and becomes so intimately united with a strand of cells from the brain that it is impossible to tell whether the common mass should be regarded as coming from brain or gland.

W. E. RITTER.

The Life Cycle of Adelea Ovata, a coccidium parasitic in the digestive epithelium of Lithobius, has been described by Siedlecki.[1] When the sporocysts, which are resistant stages, are taken into the intestine of the host, the two sporozoites are liberated from the cyst and enter the epithelium, where, by a process of endogenous generation, they give rise to two sexually different stages, the microgametocytes and the macrogametes. These pass into the lumen of the intestine, where a smaller microgametocyte attaches itself to a larger macrogamete and undergoes two divisions, producing four microgametes. These two divisions differ in character, the first being a regular division resulting only in a quantitative reduction of the chromatin, while the second is irregular and apparently reduces the number of chromosomes. The nucleus of the macrogamete also rejects a portion of its chromatin. A single microgamete then unites with the macrogamete, and divisions follow which result in the formation of the resistant sporocysts.

C. A. K.

Notes. — In the Prague *Sitzungsberichte* Dr. Mrazek describes the destruction of cysts of the sporozoan Glugea in the spinal cord of Lophius by the phagocytes of the host which press through the walls of the cyst and devour the spores.

The limnetic Peridinidæ of Norway are discussed by Huitfeldt-Kaas in the Christiania *Skrifter*. Five species are reported, of

[1] Siedlecki, M. Étude cytologique et cycle évolutif de Adelea ovata Schneider, *Ann. de l'Inst. Pasteur* (1899), pp. 169–192, Pls. I–III.

which three are new. One of these, *Ceratium curvirostre*, resembles *C. kumaonense*, described by Carter in 1871, from Hindostan. The cosmopolitan *C. hirundinella* reaches its greatest development in Norwegian waters at the maximum summer temperature, in one instance attaining 50,000,000 per square meter of lake surface.

The inaugural address of Rektor Karl Brandt of the University of Kiel reviews the methods, progress, and problems of planktology, with special reference to the productivity of the sea. The poverty of the tropical oceans is correlated with the greater activity of denitrifying organisms in these waters, while the low temperature of the arctic seas hinders this process and greater fertility ensues.

The larval form of *Epischura lacustris*, a peculiar asymmetrical copepod of our Great Lakes, has been found by Professor C. D. Marsh in Green Lake in the winter months. The structure of the male abdomen and fifth feet are described in the *Transactions of the Wisconsin Academy*. The development of the larva indicates but a remote relation to Diaptomus. The asymmetry appears late in the development of the larva.

No. 3 of Vol. IV of the *American Journal of Physiology* contains the following articles: "The Occurrence and Origin of the Xanthine Bases in the Fæces," by W. H. Parker; "Physiological Studies on Mucine," by Levin; "On the Reactions of Certain Infusoria to the Electric Current," by R. Pearl; and "A Plethysmographic Study of the Vascular Conditions during Hypnotic Sleep," by E. C. Walden.

BOTANY.

The Cyclopedia of American Horticulture.[1] — The second volume of this important work, the first volume of which was noticed in the April number of the *American Naturalist*, proves equally good with its predecessor. Several of the larger genera of Cacti, elaborated (as to their garden representatives) by well-known students of the group, are of especial interest to American botanists; the chapter on the Grape is gratifying to those who hope for the improvement of other American fruits in as successful a manner as has been achieved in grapes; much of historic interest is to be found under Greenhouses and Horticulture; and the article on Insects forms an instructive little introduction to entomology. T.

[1] Bailey, L. H., and Miller, W. *Cyclopedia of American Horticulture* (in four volumes), vol. ii, E–M. New York, The Macmillan Company, 1900.